Review:

This is a review for the paper “Scaling effects of fixed-wing ground-generation airborne wind energy systems (2022).” As scaling up will inevitable, moving up to commercial AWES, a study on the scaling effects is a valuable contribution to the R&D community. The authors did some good work on showing the potential scaling effects. Also, the two reference wind profiles and their classifications are of great value to the AWE research community. However, I would like to give some feedback to further improve the quality and making it a great contribution to the AWE community.

General:

- The results might be far off from reality as the reference aircraft, the AP2, is a first demonstrator of a company. The mass scaling might therefore be significantly different from 2.7 – 3.3. The company had different goals in mind for this demonstrator then it would have for a commercial system. I would like to see this stated better in the paper.
- I miss in the conclusion a statement where the effect of the assumptions are stated, especially on the awebox side, so the reader knows again what should be taken into account when reading each of the separate conclusions.

Specific:

- P4, l83: Why is it sorted by the wind speed of 200m? The operational altitude you consider is higher.
- P6, l108: wast → vast
- P7, l110: can not → cannot
- P7, l112: How do you justify the feasibility? You use simplifications to set up the OCP right in awebox. Inelastic tether etc.
- P9, figure 3: It might be good to show which systems are measured, and which ones are estimated/hypothetical.

- P10, l194: Is the aircraft and ground station a tether mass point? If not, what is done with half the tether segment at the ground and at the kite, which is then not assigned to a tether mass. If not taken into account, this produces inaccuracies in the total weight of the tether.
- P10, l202: How are the reeling speed and acceleration constraints determined?
- P26, l468: As the purpose of this paper is to show trends when scaling, the explanation for the increase should be tested in this paper. Possibly by starting the optimisation from different points and see if they converge to the same. This way you might be able to spot other local minima or when it converges to the same, it might be a different cause.
- P27, figure 15: I miss the explanation of the oscillations that happen at higher wind speeds, sorry if I missed this, then clarifying it better could prevent that. Also, why D/L and not L/D like the conventional way. As the axis is in percent, it might confuse the reader it is actually a value with no unit.